

## THE NAVAL DRILL.

## Important Experiments with the Torpedo.

## ELECTRICITY AND GUNPOWDER.

"Large Ships at a Low Rate of Speed Cannot Use the Torpedo Effectively."

## TARGET FIRING AT SEA.

## Destructive Capacities of the Submarine Projectiles.

## Water Thrown to the Mizzenmast of the Wabash.

## AN INTERESTING SPECTACLE.

## Tossing a Barrel as High as the Main Truck.

## The Shenandoah Did the Best Work.

## GRAND SCRUB RACE.

GULF OF FLORIDA, Feb. 24, 1874.

The great naval function now approaches the end. There is every reason to believe the fleet will sail from here on the 27th, and after stopping at the Tortugas over Sunday will return to Key West. The only exception will be the flagship Wabash, which will make a short trip to Havana. The function will end at Key West about the 10th or 11th of March.

There are very many rumors regarding the destination of the vessels of the fleet. Some assert that the Wabash will return to Europe, others declare that she is going to New York to go out of commission. It is generally believed to be true that the vessels will return to their stations. Of course this does not apply to the Ticonderoga or the Brooklyn, which have just come from South Atlantic stations.

I now resume the story of this cruise:

THURSDAY, Feb. 19, 1874.

The sixteenth day of the cruise was clear and pleasant, a light breeze from the northeast blowing most of the morning. The dispatch returned from Havana and the Florida returned from Key West. The fleet weighed anchor about the usual hour and stood west in column of vessels, natural order:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The column was headed north by signal at half-past ten, and at ten minutes of eleven, or when the last vessel of the Second division headed north, the signal "Divisions, by the left flank," was made to the First and Second divisions (or the first straight vessel), and the signal "Division, forward, into line, left oblique," to the Third division. Each vessel of the First and Second divisions came eight points to port and continued onward. The Third division executed the order as has already been described. This brought the vessels into line, heading west:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The general signal, "On the centre divisions form column of divisions, right in front," was made at a quarter past eleven. The right division steered two points to port, the left division eight points to starboard; the centre division kept its course at half speed. This brought the fleet into column of divisions, heading in same direction:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The signal, "Fleet by the right flank," twice hoisted, merely changed the direction of the column and headed it toward the eastward, in reverse order.

The general signal, "Fleet by the right flank," converted the fleet into column by divisions, heading north:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The fleet was then signalled, "By the left flank," which brought it into the same form as did the signal made at a quarter past eleven. This was followed an hour later by the signal, "Fleet by fours, left wheel." This brought the fleet into line of vessels abreast, heading south:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

This manoeuvre was followed at two by the same signal, and the fleet headed east in column of divisions, reverse order. The signal, "Fleet by the left flank," brought the fleet into the following formation, heading north:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The next signal, "Fleet, forward into line, left oblique," has been frequently explained, and resulted in bringing the vessels into line, heading north. At thirty-five minutes past two the following signal was hoisted under the Colorado's pennant: "On the vessel whose distinguishing pennant is under this signal form at half distance." The effect of this was merely to close the vessels up in the same order. The general signal, "From the left in two lines, form order of battle," having been made at a quarter past three, the even-numbered vessels maintained their speed and the others slowed to steeage way, until the former bore from them at an angle of forty-five degrees west the course, when they resumed their speed. The result was this formation, heading north:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

In this formation the fleet anchored at five. The Wabash and Brooklyn returned during the

night and reported the arrival of the Dictator at Key West.

THE SEVENTEENTH DAY'S EXERCISES.

Friday, February 20, the seventeenth day of the cruise, was devoted chiefly to target practice. A target was placed 800 yards to the eastward of the station buoy, which is located in latitude 24 deg. 2 min. north, longitude 82 deg. 9 min. west. The Ticonderoga and Dispatch were stationed respectively to the northward and southward in a line with the buoy. At half-past ten the fleet formed in column of vessels, with the Wabash leading, and passing close to the buoy, heading north, each vessel in succession fired at the target. The target consisted of a square platform of timber, with twenty-four casks lashed to it, above which was a conical turret of cotton cloth, with three ports painted on each face. The dimensions of each face were ten feet wide by thirteen in height.

After repeating the target three times the vessels drew up in columns of vessels by divisions, and at five o'clock anchored in that formation.

Days of Rest.

SATURDAY, Feb. 21, 1874.

There were no exercises on this day, and the experience of last Saturday did not encourage fishermen. The fleet remained at anchor. The day was clear and pleasant, with a light breeze from the north. The Florida and Ticonderoga went to Key West.

On Sunday, the 22d, the Gettysburg arrived from Key West and sailed for Pensacola at twelve noon. The usual order was issued regarding the observance of Monday as the anniversary of Washington's birth.

Monday, the 23d, was observed, according to a navy regulation, as the anniversary of Washington's birth. Whenever the 22d of February falls on Sunday it is ordered that the 23d shall be observed. The national colors were displayed at the three mastsheads and the peak of all vessels in the fleet, and at noon, although a violent storm of rain was falling, a salute of twenty-one guns was fired by all sailing vessels.

THURSDAY, Feb. 24, 1874.

The Oostpee arrived during the night and was assigned to the First division, taking the Wyoming's place. The day was clear and warm. The fleet weighed anchor by signal at ten A. M. and stood east in column of vessels, the Wabash leading. A target exactly similar to that described in a preceding day's account was stationed 800 yards to the northeast of the buoy. The fleet steamed past the buoy in column of vessels, heading north-west, and discharged as many guns as could be brought to bear on the target during the interval occupied in steaming 100 yards on each side of the buoy, or 200 yards of distance.

The Oostpee had the same ill fortune at first; but Lieutenant Rich made amends afterward by rigging out his torpedo a second time and exploding it in the most approved style.

The Colorado's torpedo apparatus, in charge of Lieutenant Longnecker, was in perfect working order. A solid column of water rose like one of Cleopatra's needles to a height of fully 300 feet, and seemed to settle right back into the hole which it left, without dissolving into spray as was generally noticeable. The explosion sadly damaged the raft, and the spar became entangled with it to such an extent as to require cutting loose.

The Brooklyn, whose commander has lately been at the head of the torpedo school, did the work assigned it in a very neat, shipshape way. There were no delays. Lieutenant De Long manipulated the electric key, and although the raft was in low of the Colorado at the time, discharged his torpedo at the exact spot and at the proper moment. Only one of her three torpedoes was fired.

The torpedo on the Wachusett, in charge of Lieutenant Cornwell, tossed a barrel as high as the mainmast. Fortunately it fell outside.

The Kansas was a general favorite and great expectations, only partially realized, were entertained of her. Lieutenant Stone did well, arriving so late in the line.

The Lancaster, after waiting her chance, steamed for the raft and exploded her torpedo in good style. Lieutenant Newell had charge of the ceremony.

The Alaska steamed too close to the raft, so that it passed between the torpedo (at the end of the spar) and the side of the vessel. Lieutenant Perkins stood by the electric key, but the connection was either broken or he deemed it undesirable to discharge the torpedo. It was not exploded.

The Shenandoah, all things considered, did the greatest execution. Lieutenant Commander Evans was fortunate in getting close enough, without being too near, and the whole of one side of the raft was blown to fragments.

The Fortitude, whose torpedo was in charge of her courteous commandant, Lieutenant Commander Green, was ordered to steam at full speed. This she did, but the resistance of the water was so great that the torpedo was broken off from the spar, and, consequently, was not discharged.

THE LAST EVOLUTIONS.

UNITED STATES FLAGSHIP WABASH, GULF OF FLORIDA, Feb. 25, 1874.

This is the twenty-third day of the cruise. The weather is clear and mild. The fleet weighed anchor at half-past ten and stood east in column of vessels by divisions, natural order:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The fleet passed the target three times, and at the third passage concentrated the broadsides on the object. It is a fair estimate to say that nine out of every ten shots would have hit a sloop-of-war. The concentrated broadside of the Wabash was exceptionally good, all the shots striking the water within a space of twenty-five square feet.

The fleet then formed in columns of divisions and anchored at three.

TORPEDOES IN THE GULF.

UNITED STATES FLAGSHIP WABASH, GULF OF FLORIDA, Feb. 25, 1874.

This day had been set apart for torpedo experiments, and the results were altogether quite satisfactory.

The day's experiments have taught all observing officers much that is valuable, and which will be of great advantage in future naval battles. The old fogies got a good shaking up, and possibly lost some of their untidiness. Experience is the only school which can teach an officer to be cool when manipulating the electric key which fires a mammoth torpedo. The few slight blunders of the day only served to show to every officer of this vast fleet just what to avoid. The weakness of the fittings of the torpedoes to the spars was a slight mechanical oversight, which will probably never occur again. It was proved clearly, also, that large ships at a low rate of speed cannot use the torpedo offensively, and that, while the torpedo might be a very efficient safeguard against boarding parties or the torpedo boats of the enemy, it cannot be used against a vessel which cannot be overtaken. As an offensive agent it can be employed with ease by a fast steamer, even in mid-ocean. Spars might be rigged along each vessel's side, so that they could be swung into place on the approach of a heavy ram, against whose sides guns would be worthless, and her bow blown off before she could deal the fatal blow. All these things seem possible.

THE ELECTRIC TORPEDO.

is certainly a great improvement over the old system of percussion weapons. They are as dangerous to friends as enemies, and if a guy rope carried away or a tackle broke the officer of a ship had a perfect assurance that he was not his adversary's would go to the bottom. The application of electricity, however, does away with all this, and takes all the responsibility and danger out of the hands of

CARELESS AND TIMID SAILORS who are employed to put the torpedoes in place, and lodges it with a competent officer who has been trained for that very service at Newport. While the key remains open the torpedo is as harmless as any loaded shell in the magazine. The torpedo officer has the entire system of submarine defence completely under his control, and can explode the terrible weapon just at the desired instant. I saw enough to-day to satisfy me that some of these charges exploded under even a 4,000 tons man-of-war would have sent her to the bottom. It does not believe that the raft used of any sort of service, only indicating a spot at which the explosion should occur. It was light, fragile and of insufficient draught or bulk to show the effect of a mighty upheaval of the water which foisted it. There should have been a bulk, then the experiments would have been more useful.

The result of the day's work is given below:

WEDNESDAY, Feb. 25, 1874.

The weather was clear but intolerably warm, the thermometer ranging around the eighties. A raft, composed of a heavy mass of planks, buoyed by about fifty casks, was set adrift about noon. The vessels were all fitted with torpedo spars, pursuant to a general order issued on last evening, which I send you by telegraph to-night, and they were directed to remain as near the float as possible, exploding the torpedoes as they passed. The torpedoes were of cast iron, attached to spars fifty feet in length, and contained 100 to 125 pounds of powder. The Fortitude was ordered to steam at the target under full speed, but the resistance of the water against the spar was so great as to break the torpedo short off and to send it to the bottom of the Gulf. The following is the official report, which is only sent as a supplement to the despatches:

Number Number Number

Vessel. to be Fired. Fired. Missed.

Wabash. 3. 3. 0.

Congress. 1. 1. 0.

Canandaigua. 1. 1. 0.

Ticonderoga. 1. 1. 0.

Oostpee. 1. 1. 0.

Colorado. 1. 1. 0.

Brooklyn. 3. 3. 2.

Wachusett. 1. 1. 0.

Shenandoah. 1. 1. 0.

Alaska. 1. 1. 0.

Fortitude. 1. 1. 0.

Total. 19. 19. 0.

To comment on the firing by the various ships it might be said briefly that the greatest execution

was done by the Shenandoah, the highest column of water was thrown by the Colorado, and the most picturesque water grotto took shape from the explosion by the Brooklyn's torpedo.

DISCOUNTING AN EARLY ATTACK.

The Wabash, Lieutenant Bradford torpedo officer, exploded only one of her three torpedoes on the first circle. It was the one rigged on the starboard quarter. It was standing in the mizen port with several officers of the ship and we were all drenched. The sensation was very unpleasant—it was something decidedly unearthy. The good ship Wabash trembled in every timber. The shock was far greater than a double broadside from both tiers of guns. After all the vessels had passed the Wabash returned again to the raft, and the torpedoes on the bow and abeam were exploded. A solid column of water was in each instance thrown higher than the top of the mainmast. Tons of water descended on the deck and on the awnings which had been spread over the poop deck. It is very doubtful whether such shocks do vessels of the Wabash's size any good.

The Congress, whose torpedo officer was Lieutenant Commander Sampson, fired her charge at the proper moment, directly under the raft; but, owing to the lateral explosion, although the raft was lifted high into the air, it was not destroyed. The Ticonderoga's torpedo, under charge of Lieutenant Houston, was exploded too soon. The spar was not under the raft, and no effect was observable.

The Canandaigua, on account of some derangement of the galvanic current, could not explode her torpedo on first passing the raft; but Lieutenant De Blois repaired the faulty spot and discharged his torpedo at the fragment of a raft which then remained.

The Oostpee had the same ill fortune at first; but Lieutenant Rich made amends afterward by rigging out his torpedo a second time and exploding it in the most approved style.

The Colorado's torpedo apparatus, in charge of Lieutenant Longnecker, was in perfect working order. A solid column of water rose like one of Cleopatra's needles to a height of fully 300 feet, and seemed to settle right back into the hole which it left, without dissolving into spray as was generally noticeable. The explosion sadly damaged the raft, and the spar became entangled with it to such an extent as to require cutting loose.

The Brooklyn, whose commander has lately been at the head of the torpedo school, did the work assigned it in a very neat, shipshape way. There were no delays. Lieutenant De Long manipulated the electric key, and although the raft was in low of the Colorado at the time, discharged his torpedo at the exact spot and at the proper moment. Only one of her three torpedoes was fired.

The torpedo on the Wachusett, in charge of Lieutenant Cornwell, tossed a barrel as high as the mainmast. Fortunately it fell outside.

The Kansas was a general favorite and great expectations, only partially realized, were entertained of her. Lieutenant Stone did well, arriving so late in the line.

The Lancaster, after waiting her chance, steamed for the raft and exploded her torpedo in good style. Lieutenant Newell had charge of the ceremony.

The Alaska steamed too close to the raft, so that it passed between the torpedo (at the end of the spar) and the side of the vessel. Lieutenant Perkins stood by the electric key, but the connection was either broken or he deemed it undesirable to discharge the torpedo. It was not exploded.

The Shenandoah, all things considered, did the greatest execution. Lieutenant Commander Evans was fortunate in getting close enough, without being too near, and the whole of one side of the raft was blown to fragments.

The Fortitude, whose torpedo was in charge of her courteous commandant, Lieutenant Commander Green, was ordered to steam at full speed. This she did, but the resistance of the water was so great that the torpedo was broken off from the spar, and, consequently, was not discharged.

THE LAST EVOLUTIONS.

UNITED STATES FLAGSHIP WABASH, GULF OF FLORIDA, Feb. 25, 1874.

This is the twenty-third day of the cruise. The weather is clear and mild. The fleet weighed anchor at half-past ten and stood east in column of vessels by divisions, natural order:

1. Congress. 7. Kansas. 10. Franklin. 13. Alaska. 16. Fortitude.

2. Ticonderoga. 8. Dispatch. 11. Lancaster. 14. Colorado. 17. Fortitude.

3. Canandaigua. 9. Franklin. 12. Alaska. 15. Colorado. 18. Fortitude.

4. Wyoming. 10. Franklin. 13. Alaska. 16. Fortitude.

5. Colorado. 11. Lancaster. 14. Colorado. 17. Fortitude.

6. Shenandoah. 12. Alaska. 15. Colorado. 18. Fortitude.

The fleet passed the target three times, and at the third passage concentrated the broadsides on the object. It is a fair estimate to say that nine out of every ten shots would have hit a sloop-of-war. The concentrated broadside of the Wabash was exceptionally good, all the shots striking the water within a space of twenty-five square feet.

The fleet then formed in columns of divisions and anchored at three.

TORPEDOES IN THE GULF.

UNITED STATES FLAGSHIP WABASH, GULF OF FLORIDA, Feb. 25, 1874.

This day had been set apart for torpedo experiments, and the results were altogether quite satisfactory.

The day's experiments have taught all observing officers much that is valuable, and which will be of great advantage in future naval battles. The old fogies got a good shaking up, and possibly lost some of their untidiness. Experience is the only school which can teach an officer to be cool when manipulating the electric key which fires a mammoth torpedo. The few slight blunders of the day only served to show to every officer of this vast fleet just what to avoid. The weakness of the fittings of the torpedoes to the spars was a slight mechanical oversight, which will probably never occur again. It was proved clearly, also, that large ships at a low rate of speed cannot use the torpedo offensively, and that, while the torpedo might be a very efficient safeguard against boarding parties or the torpedo boats of the enemy, it cannot be used against a vessel which cannot be overtaken. As an offensive agent it can be employed with ease by a fast steamer, even in mid-ocean. Spars might be rigged along each vessel's side, so that they could be swung into place on the approach of a heavy ram, against whose sides guns would be worthless, and her bow blown off before she could deal the fatal blow. All these things seem possible.

THE ELECTRIC TORPEDO.

is certainly a great improvement over the old system of percussion weapons. They are as dangerous to friends as enemies, and if a guy rope carried away or a tackle broke the officer of a ship had a perfect assurance that he was not his adversary's would go to the bottom. The application of electricity, however, does away with all this, and takes all the responsibility and danger out of the hands of

CARELESS AND TIMID SAILORS who are employed to put the torpedoes in place, and lodges it with a competent officer who has been trained for that very service at Newport. While the key remains open the torpedo is as harmless as any loaded shell in the magazine. The torpedo officer has the entire system of submarine defence completely under his control, and can explode the terrible weapon just at the desired instant. I saw enough to-day to satisfy me that some of these charges exploded under even a 4,000 tons man-of-war would have sent her to the bottom. It does not believe that the raft used of any sort of service, only indicating a spot at which the explosion should occur. It was light, fragile and of insufficient draught or bulk to show the effect of a mighty upheaval of the water which foisted it. There should have been a bulk, then the experiments would have been more useful.

The result of the day's work is given below:

WEDNESDAY, Feb. 25, 1874.

The weather was clear but intolerably warm, the thermometer ranging around the eighties. A raft, composed of a heavy mass of planks, buoyed by about fifty casks, was set adrift about noon. The vessels were all fitted with torpedo spars, pursuant to a general order issued on last evening, which I send you by telegraph to-night, and they were directed to remain as near the float as possible, exploding the torpedoes as they passed. The torpedoes were of cast iron, attached to spars fifty feet in length, and contained 100 to 125 pounds of powder. The Fortitude was ordered to steam at the target under full speed, but the resistance of the water against the spar was so great as to break the torpedo short off and to send it to the bottom of the Gulf. The following is the official report, which is only sent as a supplement to the despatches:

Number Number Number

Vessel. to be Fired. Fired. Missed.

Wabash. 3. 3. 0.

Congress. 1. 1. 0.

Canandaigua. 1. 1. 0.

Ticonderoga. 1. 1. 0.

Oostpee. 1. 1. 0.

Colorado. 1. 1. 0.

Brooklyn. 3. 3. 2.

Wachusett. 1. 1. 0.

Shenandoah. 1. 1. 0.

Alaska. 1. 1. 0.

</